

In the claims:

1. (currently amended) A method for performing a plurality of filter operations on a data packet using an instruction, comprising:

receiving a single instruction to filter at least one data packet, the at least one data packet comprising a header having a plurality of data fields;

in response to the single instruction, retrieving a filter result based on the received instruction, the filter result being indicative of a plurality of filter operations to be performed on the packet, each filter operation associated with a different action; and

performing at least two of a plurality of filter operations on the same data field in the data packet header in accordance with the retrieved filter result,

whereby one field of the data packet header is processed in parallel with multiple filter operations.

2. (original) The method of claim 1, further comprising processing the at least one data packet based on a determination of the performed filter operations.

3. (original) The method of claim 1, wherein the instruction comprises a set of data bits.

4. (original) The method of claim 3, wherein the set of data bits of the instruction comprises 32 data bits.

5. (original) The method of claim 4, wherein the filter operations comprise 32 filter operations.

6. (original) The method of claim 3, wherein the set of data bits of the instruction comprises 64 data bits.

7. (original) The method of claim 6, wherein the filter operations comprise 64 filter operations.

8. (original) The method of claim 2, wherein the processing of the data packet comprises classifying the data packet.

9. (original) The method of claim 1, wherein the data packet comprises one of SONET, ATM, Ethernet, HDLC, PPP, IP, TCP, and UDP data packet..

10. (cancelled)

11. (cancelled)

12. (original) The method of claim 3, wherein the filter operations correspond to the data bits of the instruction.

13. (original) The method of claim 1, wherein the retrieving the filter result based on the received instruction comprises a radix search.

14. (currently amended) An apparatus for performing a plurality of filter operations on a data packet using a single instruction, comprising:

a memory configured to store a filter result, the filter result being retrieved from the memory in response to the single instruction, the filter result being configured to filter at least one data packet, the at least one data packet comprising a header having a plurality of data fields, and the filter result being indicative of a plurality of filter operations, each filter operation associated with a different action; and

performing at least two of a plurality of filter operations on the same data field in the data packet header in accordance with the retrieved filter result,

whereby one field of the data packet header is processed in parallel with multiple filter operations.

15. (original) The apparatus of claim 14, wherein the processor is configured to process the at least one data packet based on a determination of the filter operations.

16. (original) The apparatus of claim 14, wherein the instruction comprises a set of data bits.

17. (original) The apparatus of claim 16, wherein the set of data bits of the instruction comprises 32 data bits.

18. (original) The apparatus of claim 17, wherein the filter operations comprise 32 filter operations.

19. (original) The apparatus of claim 16, wherein the set of data bits of the instruction comprises 64 data bits.

20. (original) The apparatus of claim 19, wherein the filter operations comprise 64 filter operations.

21. (original) The apparatus of claim 15, wherein processing the at least one data packet comprises classifying the at least one data packet.

22. (original) The apparatus of claim 14, wherein the at least one data packet comprises one of SONET, ATM, Ethernet, HDLC, PPP, IP, TCP, and UDP data packet.

23. (cancelled)

24. (cancelled)

25. (original) The apparatus of claim 16, wherein the filter operations correspond to the data bits of the instruction.

26. (original) The apparatus of claim 14, wherein retrieving the filter result based on the received instruction comprises a radix search.

27. (currently amended) A computer-readable medium encoded with a program for a computer, the program comprising:

logic operable to receive an instruction to filter at least one data packet, the at least one data packet comprising a header having a plurality of data fields;

logic operable in response to a single instruction to retrieve a filter result based on the received instruction, where the filter result is indicative of a plurality of filter operations, and each filter operation is associated with a different action; and

performing at least two of the filter operations on the same data field in the data packet header in accordance with the retrieved filter result,

whereby one field of the data packet header is processed in parallel with multiple filter operations.

28. (original) The computer-readable medium of claim 27, further comprising processing the at least one data packet based on a determination of the performed filter operations.

29. (original) The computer-readable medium of claim 27, wherein the instruction comprises a set of data bits.

30. (original) The computer-readable medium of claim 29, wherein the set of data bits of the instruction comprises 32 data bits.

31. (original) The computer-readable medium of claim 30, wherein the filter operations comprise 32 filter operations.

32. (original) The computer-readable medium of claim 29, wherein the set of data bits of the instruction comprises 64 data bits.

33. (original) The computer-readable medium of claim 29, wherein the filter operations comprise 64 filter operations.

34. (original) The computer-readable medium of claim 28, wherein the processing of the data packet comprises classifying the data packet.

35. (original) The computer-readable medium of claim 27, wherein the data packet comprises one of SONET, ATM, Ethernet, HDLC, PPP, IP, TCP, and UDP data packet.

36. (cancelled)

37. (cancelled)

38. (original) The computer-readable medium of claim 29, wherein the filter operations correspond to the data bits of the instruction.

39. (original) The computer-readable medium of claim 27, wherein the retrieving the filter result based on the received instruction comprises a radix search.